

1.0 EXECUTIVE SUMMARY

Sixteen (16) soil borings and eight (8) groundwater monitoring wells were installed and tested as part of a site investigation completed for the Sherman Food Mart property located at 1010 Sherman Avenue in Madison, Wisconsin. The site investigation was initiated in response to a release of petroleum hydrocarbons identified during a preliminary site investigation completed at the site and was conducted in accordance with the requirements of Wisconsin Administrative Codes NR 700 [1] and NR 746 [2].

Based on the results of site investigation activities and the previous use of the property as a gasoline filling station, an area of concern for soil and groundwater was identified in proximity to the former underground storage tanks (USTs) on the site. On completion of the site investigation, significant petroleum hydrocarbon levels were not observed in the near surface soil. However, PECFA eligible soil removal was conducted following UST system removal at the site. Approximately 553 tons of PECFA eligible and 644 tons of non-PECFA eligible soil were removed from the site for bio-treatment during the construction of a new gasoline service station on-site. The results of confirmation soil analysis conducted following the excavation activities indicates the presence of residual soil impacts on-site that exceed the residual contaminant levels established by WDNR in Wisconsin administrative code NR 720.

In addition, soil impacted with tetrachloroethene (PCE) was documented during the site investigation activities completed on-site. Although a dry cleaning operation formerly existed on the property at one time, a hazardous waste determination completed for the property indicated that the source of the impacts could not be determined. Therefore, PCE impacted soil generated as waste at the site was deemed to be non-hazardous by WDNR. During the construction of a new convenience store building on the property, approximately 60 tons of PCE impacted soil was removed and disposed to a licensed landfill facility.

The results of groundwater monitoring and sampling completed during the site investigation indicated that volatile organic compounds (VOCs) concentrations exceeding both the NR 140 groundwater preventive action limits (PALs) and enforcement standards (ES) for several VOCs constituents were present in the shallow groundwater primarily on the northern portion of the site. Petroleum hydrocarbons in groundwater were present primarily at the northeast corner property. PCE impacts were documented on the northwestern portion of the site. In an effort to evaluate the extent of petroleum hydrocarbons off-site to the northeast, an off-site groundwater monitoring well was installed. Concentrations of VOCs exceeding the PALs and ES were also noted to be present at this monitoring well location.

The nature of the low permeability silty clay soil on-site appears to have limited the extent of the soil and groundwater impacts to the area surrounding the former UST systems. Although contaminant movement in groundwater has occurred off-site to the north, the shallow groundwater in the vicinity of the site appears to be confined within discontinuous silt and silty sand lenses contained in a matrix of silty clay. This groundwater is not being used as a drinking water or municipal groundwater source. Potential receptors of concern including surface water bodies were not identified to exist within close proximity to the site.

The site and soil removal areas are currently overlain by a new building structure and concrete and asphalt surfacing. The new "cover" will serve to reduce surface water infiltration to the residually contaminated soil which exists at the former UST basin and residual PCE impacts which exist on the site. Based on the findings of the site investigation discussed in this report, the results of the soil removal completed on-site, lack of potential area receptors and the existence of a new "cap" over the residually impacted areas of soil, site closure with placement on the geographic information systems (GIS) registry will be requested for the property following a minimum of two additional groundwater monitoring and sampling events..

Soil Probe

B-13
MW-6

Rail Road Right of Way

B-12
MW-5

Depth 3.5-5'
PCE <25 ppb

Depth 6-7.5'
PCE <25 ppb

Source: Key Engineering
Group Site Layout
Figure.

Notes: PCE concentrations other than TCLP adapted from
KEY Engineering Group test results. Structures shown
no longer exist. Structure dimensions and locations
obtained from Survey Map obtained by owner, date unknown.

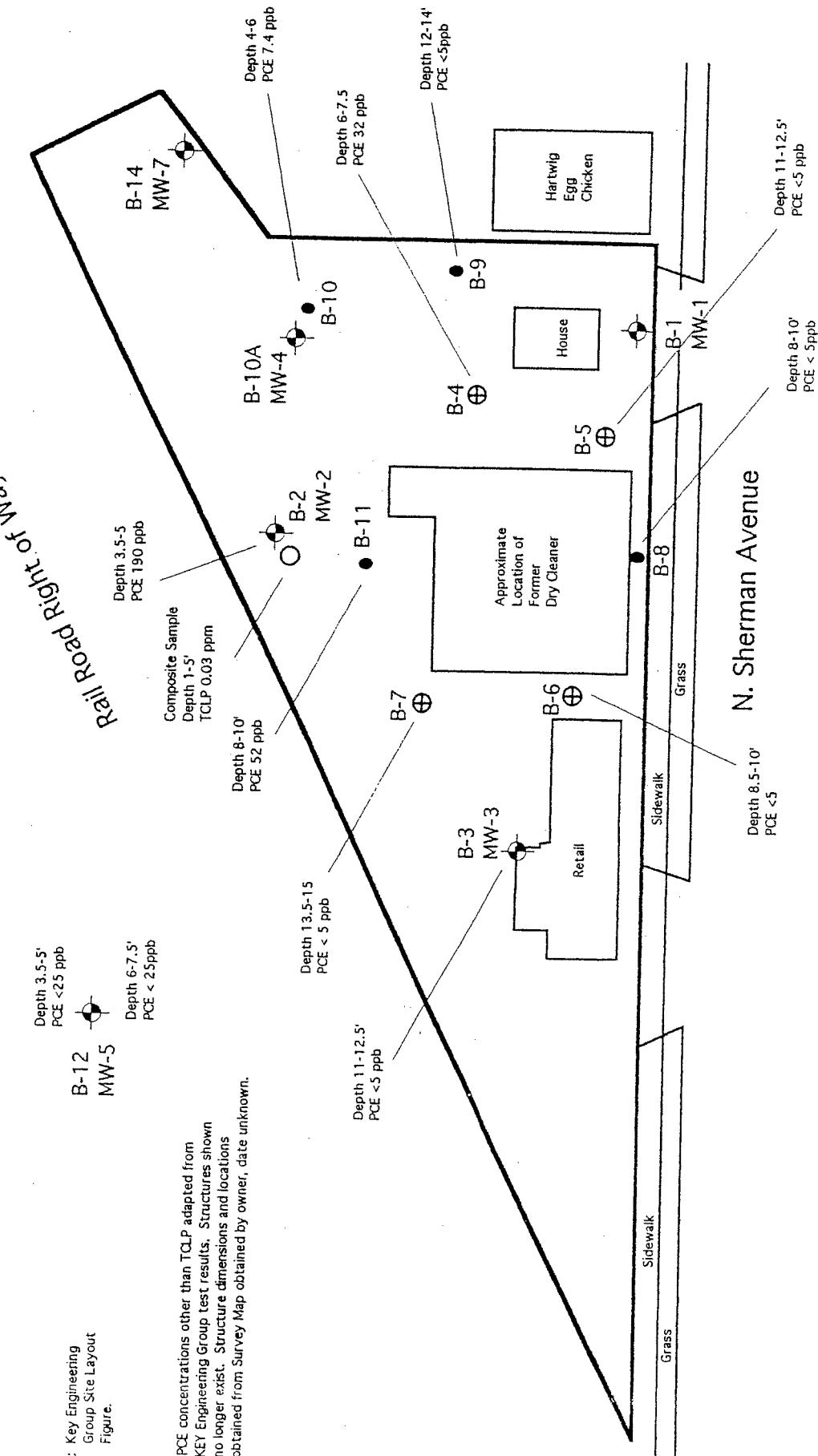


Figure 3: Location of Former Dry Cleaning Facility &
PCE Contaminant Distribution in Soil

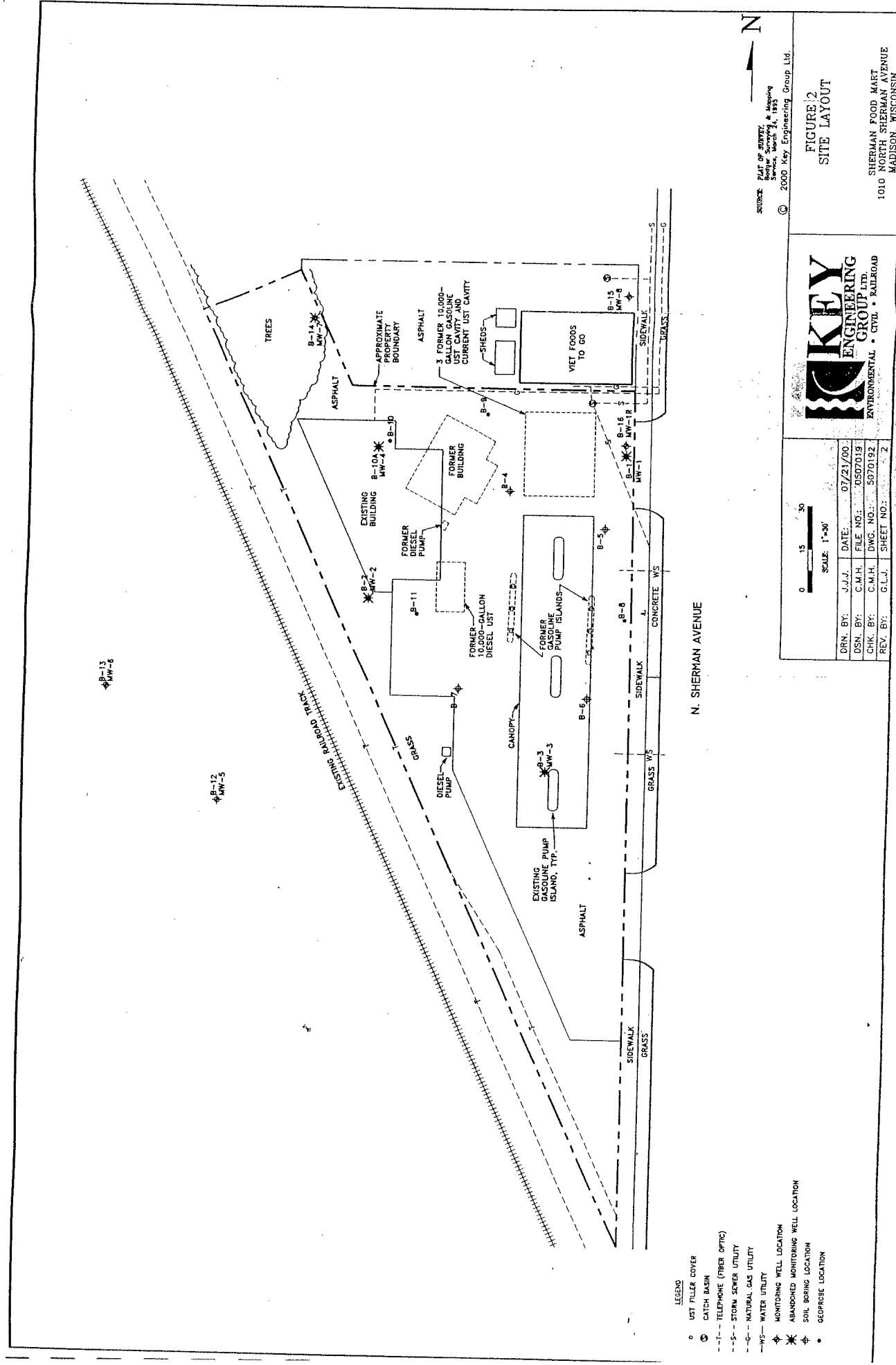
Drawn By:	SDM	12/20/99
Reviewed By:	VSV	Revisions
Project No.	98-12-02	

AXIS Engineering, L.L.C.

Sherman Food Mart
1010 North Sherman Avenue
Madison, WI

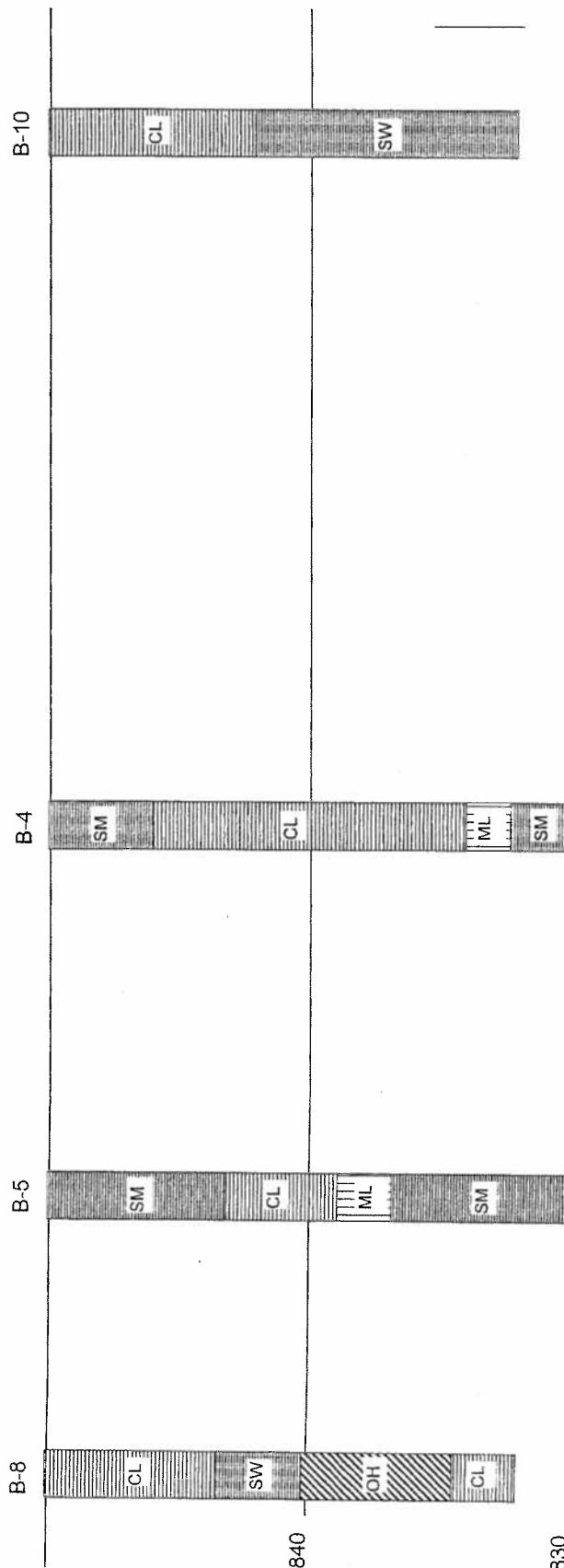
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SCALE
0 20' 40'



LEGEND

- UST FILLER COVER
- ◎ CATCH BASIN
- (T) TELEPHONE (FIBER OPTIC)
- △ STORM SEWER UTILITY
- NATURAL GAS UTILITY
- WATER UTILITY
- ◆ MONITORING WELL LOCATION
- ★ ABANDONED MONITORING WELL LOCATION
- ▲ SOIL BORING LOCATION
- GEOPRICE LOCATION



Legend

SM/SW = Silty sands, sand-silt mixtures
 CL = Inorganic clays of low to medium plasticity, gravelly clays, sandy
 clays, silty clays, lean clays
 ML = Inorganic silts, very fine sands, rock flour, silty or clayey fine sands

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 1010 North Sherman Avenue
 Madison, WI 53704

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Figure 4: Geologic Cross Section

Drawn By: DJM
Reviewed By: VSV
Date: 6/26/00
Project No. 98-12-02

TABLE 3
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS

SHERMAN FOOD MART
 1010 North Sherman Avenue
 Madison, Wisconsin

PARAMETER	SAMPLE IDENTIFICATION				PAL	ES
	MW-1	MW-1R	MW-2	MW-3		
Date Collected	2/5/96	9/26/96	6/18/99	10/4/99	2/5/96	9/26/96
GRO (µg/l)	1,500	4,900	3,400	2,600	<50	<50
DRO (µg/l)	270	1,400	NA	NA	<100	<100
Lead (µg/l)	2.1	NA	NA	8.6	<1.5	NA
PVOCS (µg/l)						
Benzene	1.8	11	26	45	<0.5	<0.5
Toluene	<1.0	<2.0	4.9 Q	4.5 Q	<1.0	<1.0
Ethylbenzene	7.9	41	130	58	<1.0	<1.0
Xylenes	20	100	490	100	<3.0	<3.0
Total Trimethylbenzenes	12.9	540	841	778	<2.0	<2.0
MTBE	<1.0	17	6.6 Q	13	<1.0	<1.0
Detected VOCs (µg/l)						
Isopropylbenzene	5.1	36	NA	NA		
Naphthalene	2.9	14	65	NA	<1.0	<1.0
n-Butylbenzene	<1.0	120	NA	NA	<1.0	<1.0
n-Propylbenzene	24	87	NA	NA	<1.0	<1.0
p-Isopropyltoluene	5.4	11	NA	NA	<1.0	<1.0
sec-Butylbenzene	2.9	12	NA	NA	<1.0	<1.0
Tetrachloroethene	<1.0	<2.0	NA	NA	7.4	24
Vinyl chloride	9.2	13	NA	NA	<1.0	<1.0
cis-1,2-Dichloroethene	21	21	NA	NA	<3.0	<1.0
1,2-Dichloroethane	<1.0	<2.0	NA	NA	<1.0	<1.0
Trichloroethene	<1.0	<2.0	NA	NA	<1.0	<1.0

Notes:

Bold values exceed NR 140 PAL

Shaded values exceed NR 140 ES

DRO - diesel range organics

ES - NR 140 enforcement standard

GRO - gasoline range organics

MTBE - methyl tert-butyl ether

NA - not analyzed

NS - no standard established

PAL - NR 140 preventive action limit

PVOCS - petroleum volatile organic compounds

Q - detected between limit of detection and limit of quantitation

µg/l - micrograms per liter

VOCs - volatile organic compounds

Nov 1
4-1
Wk 13 w4

TABLE 3 (CONTINUED)
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS

SHERMAN FOOD MART
1010 North Sherman Avenue
Madison, Wisconsin

PARAMETER	SAMPLE IDENTIFICATION					
	MW-4	MW-5	MW-6	MW-7	MW-8	PAL
Date Collected	8/30/96	9/26/96	7/5/96	7/5/96	10/4/99	
GRO ($\mu\text{g/l}$)	<50	<50	NA	NA	NS	
DRO ($\mu\text{g/l}$)	<100	<100	NA	NA	7,100	ES
Lead ($\mu\text{g/l}$)	<1.5	NA	NA	NA	NS	
PtVOCS ($\mu\text{g/l}$)						
Benzene	<0.50	<0.50	<0.50	<0.50	540	0.5
Toluene	<0.50	<1.0	<0.50	<0.50	170	200
Ethylbenzene	<0.50	<1.0	<0.50	<0.50	360	1,000
Xylenes	<0.50	<1.0	<0.50	<0.50	1,070	700
Total Trimethylbenzenes	<2.0	<2.0	<2.0	<2.0	1,370	1,000
MtBE	<5.0	<1.0	<5.0	<5.0	130	96
Detected VOCS ($\mu\text{g/l}$)						
Isobutylbenzene	<0.50	<1.0	<0.50	<0.50	12	480
Naphthalene	<8.0	<1.0	<8.0	<8.0	210	60
n-Butylbenzene	<0.50	<1.0	<0.50	<0.50	36	70
n-Propylbenzene	<0.50	<1.0	<0.50	<0.50	140	NS
β-Isopropenylidene	<0.50	<1.0	<0.50	<0.50	<3.4	NS
sec-Butylbenzene	<0.50	<1.0	<0.50	<0.50	11 Q	40
Tetrachloroethene	31	47	<0.50	<0.50	7.6	<5.6
Vinyl Chloride	<0.20	<3.0	<0.20	<0.20	0.5	5
Cis-1,2-Dichloroethene	<0.50	<1.0	<0.50	<0.50	<3.2	0.02
1,2-Dichloroethane	<0.50	<0.50	<0.50	<0.50	22	0.2
Trichloroethene	<0.50	<0.50	<0.50	<0.50	11	7
					13	70
						5
						5

Notes:

bold values exceed NR 140 PAL

shaded values exceed NR 140 ES

DRO - diesel range organics

ES - NR 140 enforcement standard

GRO - gasoline range organics

MtBE - methyl tert-butyl ether

NA - no standard established

NA - not analyzed

PAL - NR 140 preventive action limit

PtVOCS - petroleum volatile organic compounds

Q - detected between limit of detection and limit of quantitation

$\mu\text{g/l}$ - micrograms per liter

VOCs - volatile organic compounds

TABLE 2
SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS

SHERMAN FOOD MART
 1010 North Sherman Avenue
 Madison, Wisconsin

PARAMETER	Depth (feet)						GRCL
	B-1	B-2	B-3	B-4	B-5	B-6	
PID (i.u.)	13.5 - 15	18.5 - 20	3.5 - 5	18.5 - 20	11 - 12.5	18.5 - 20	8.5 - 10
GRO (mg/kg)	342	382	26	6	3	51	4
DRO (mg/kg)	5.2	6.4	<5.0	<5.0	<5.0	<5.0	<1
Lead (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	6
PvOCs (ug/kg)	6.9	5.1	46	<4.0	9.2	4.6	<5.0
Benzene	<5.0	<5.0	<5.0	<5.0	53	8.4	<5.0
Toluene	<5.0	<5.0	<5.0	<5.0	18	6	<5.0
Ethylbenzene	<5.0	<5.0	<5.0	<5.0	<5.0	25	8.9
Xylenes	21	<5.0	<5.0	<5.0	9.3	<5.0	<5.0
Total Trimethylbenzenes	60	<15	<15	<5.0	<5.0	<5.0	<5.0
MTBE	418	31.3	<10	<15	<5.0	<5.0	<5.0
Detected VOCs (ug/kg)	<5.0	<5.0	<5.0	<10	<10	<15	<5.0
Chloroform ¹	<5.0	<5.0	<5.0	<5.0	<10	<10	<15
Isopropylbenzene	1.1	<5.0	<5.0	<5.0	<5.0	<5.0	<10
Methylene Chloride ¹	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Naphthalene	23	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
<i>n</i> -Propylbenzene	4.7	5.4	<5.0	<5.0	<50	62	<5.0
<i>o</i> -Isopropyltoluene	19	<5.0	<5.0	<5.0	<5.0	<50	<5.0
Sec-Butylbenzene	8.6	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Tetrachloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cis-1,2-Dichloroethene	<5.0	<5.0	190	21	<5.0	<5.0	<5.0
Notes:							
Bold values exceed NR 720 GRCL							
< . less than							

¹ Identified by the laboratory as a laboratory contaminant

² NR 720 GRCL based on direct contact risk

DRO - diesel range organics

GRCL - NR 720 generic residual contaminant level based on the protection of groundwater

i.u. - instrument units

mg/kg - milligrams per kilogram

MTBE - methyl tert-butyl ether

NA - not analyzed

NS - no standard established

PID - photoionization detector

PvOCs - petroleum volatile organic compounds

ug/kg - micrograms per kilogram

VOCs - volatile organic compounds

TABLE 2 (CONTINUED)

SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS

SHERMAN FOOD MART
1010 North Sherman Avenue
Madison, Wisconsin

PARAMETER	B-8	B-9	B-10	B-11	B-12	B-13	B-14	B-15
Dieldrin (ppm)	B-10 <2	16.16 <2	12.14 1.335	16.16 13	4.6 <2	14.16 <2	8.10 <1	3.55 <1
GRO (mg/kg)	B-10 <5.0	28 <5.0	28 <5.0	28 <5.0	28 <5.0	28 <5.0	28 <5.0	28 <5.0
DRG (mg/kg)	B-10 <5.0	11 <5.0	11 <5.0	100 <5.0	NA <5.0	NA <5.0	NA <5.0	NA <5.0
Lead (mg/kg)	B-10 1.9	NA 9.4	NA NA	NA NA	NA 8.3	NA NA	NA NA	NA NA
PVOCs (ug/kg)	B-10 Benzene	B-10 <5.0	B-10 <5.0	B-10 <5.0	B-10 <5.0	B-10 <5.0	B-10 <5.0	B-10 <5.0
Toluene	B-10 <5.0	B-10 <5.0	B-10 <5.0	B-10 <5.0	B-10 <5.0	B-10 <5.0	B-10 <5.0	B-10 <5.0
Ethylbenzene	B-10 <5.0	B-10 <5.0	B-10 <5.0	B-10 <5.0	B-10 <5.0	B-10 <5.0	B-10 <5.0	B-10 <5.0
Xylenes	B-10 <5.0	B-10 <15	B-10 <10	B-10 <15	B-10 <15	B-10 <15	B-10 <10	B-10 <10
Total Toluene/benzenes	B-10 B-10	B-10 4.8	B-10 4.8	B-10 4.8	B-10 4.8	B-10 4.8	B-10 4.8	B-10 4.8
HTER	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10
Selected VOCs (ug/kg)	B-10 Chloroform	B-10 5.1	B-10 5.1	B-10 5.1	B-10 5.1	B-10 5.1	B-10 5.1	B-10 5.1
Isobutylbenzene	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10
Methylene Chloride ¹	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10
Naphthalene	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10
n-Propylbenzene	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10
o-Isopropylbenzene	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10
p-Isobutylbenzene	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10
Terphenylbenzene	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10
cis-1,2-Dichloroethene	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10	B-10 B-10

Notes:

Bold values exceed NR 720 GRCL

< = less than

¹ Identified by the laboratory as a laboratory contaminant

GRCL = NR 720 based on direct contact risk

GRO = Gasoline range organics

GRCL = NR 720 generic residual contaminant level based on the protection of groundwater

Instrument units

mg/kg = milligrams per kilogram

µg/kg = micrograms per kilogram

mL/kg = methyl tert-butyl ether

NA = not analyzed

NS = no standard established

PID = protonization detector

PVOCs = petroleum volatile organic compounds

D = detected between limit of detection and limit of quantitation

PQ = limit of quantitation

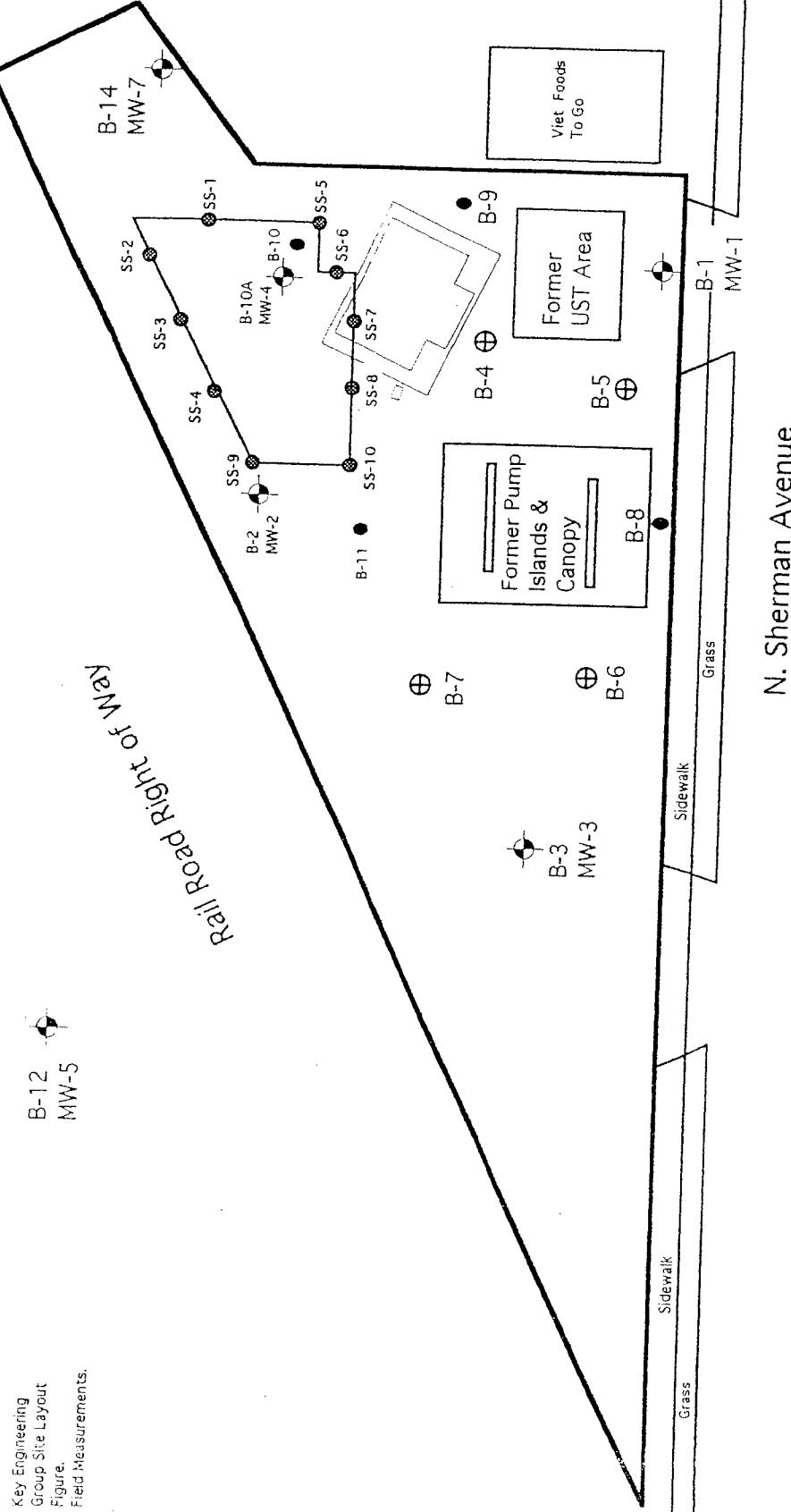
VOCs = volatile organic compounds

Legend

- Monitoring Well
- ⊕ Soil Boring
- ◎ Soil Probe
- Soil Sample Location

Source: Key Engineering
Group Site Layout
Figure.
Field Measurements.

B-12
MW-5



Sherman Food Mart
1010 North Sherman Avenue
Madison, WI

AXIS
Engineering, L.L.C.

Figure 8: PCE Soil Sample Locations.

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1" = 40'	0	20' 40'

SCALE